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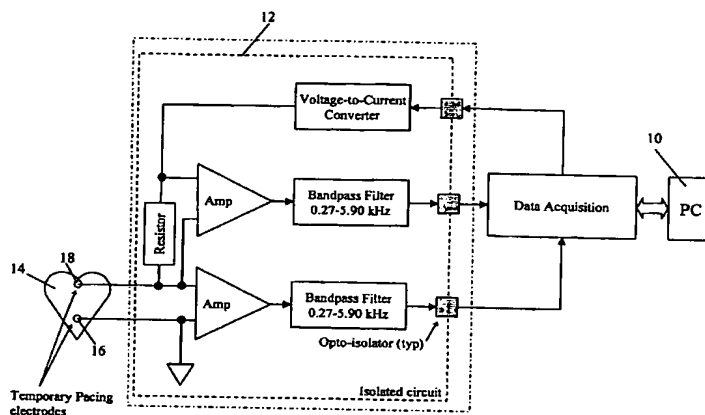
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[Continued on next page]

(54) Title: MEASURING HUMAN HEART MUSCLE VIABILITY USING MYOCARDIAL ELECTRICAL IMPEDANCE



(57) Abstract: A method for detecting a quantitative measure of a physiologic state of a human myocardium or coronary artery. Implementations of the method detect the extent of change of myocardial electrical impedance from a mean baseline value to provide diagnosis of the extent of ischemia, stenosis, tissue rejection, and reperfusion and the effectiveness of cardioplegia and ischemia preconditioning as well as the general effectiveness of coronary bypass surgery as measured by post-operative reperfusion. Electrodes are attached to the myocardium, baseline measurements of the mean myocardial electrical impedance are stored and the variance of the myocardial electrical impedance and a baseline value of mean myocardial electrical impedance are computed from the baseline measurements and stored. Mean myocardial electrical impedance values are periodically measured between each electrode pair over an interval of time and stored. After the mean myocardial electrical impedance changes from the computed baseline value by at least the measured variance, the extent of change in the myocardial physiologic state is diagnosed as a continuous, smooth, function of the extent of change, or rate of change, of the periodically measured myocardial electrical impedance from the baseline value.

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ,

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